Complete Summary

GUIDELINE TITLE

Prevention of catheter-associated urinary tract infections. In: Prevention and control of healthcare-associated infections in Massachusetts.

BIBLIOGRAPHIC SOURCE(S)

Prevention of catheter-associated urinary tract infections. In: Betsy Lehman Center for Patient Safety and Medical Error Reduction, JSI Research and Training Institute, Inc. Prevention and control of healthcare-associated infections in Massachusetts. Part 1: final recommendations of the Expert Panel. Boston (MA): Massachusetts Department of Public Health; 2008 Jan 31. p. 83-9.

GUIDELINE STATUS

This is the current release of the guideline.

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Catheter-associated urinary tract infection

GUIDELINE CATEGORY

Prevention

CLINICAL SPECIALTY

Infectious Diseases
Internal Medicine

Preventive Medicine
Urology

INTENDED USERS

Advanced Practice Nurses
Hospitals
Nurses
Physician Assistants
Physicians

GUIDELINE OBJECTIVE(S)

- To provide evidence-based recommendations for a statewide infection control and prevention program to improve health outcomes by reducing the risk of acquiring and transmitting healthcare-associated infections
- To provide recommendations for prevention of catheter-associated urinary tract infections

TARGET POPULATION

Patients with urinary catheters at risk of catheter-associated urinary tract infection

INTERVENTIONS AND PRACTICES CONSIDERED

1. Provide appropriate infrastructure for prevention of catheter-associated urinary tract infection (CAUTI) including written guidelines, trained personnel, and documentation
2. Perform surveillance for CAUTI
3. Educate healthcare workers about CAUTI and measures to prevent infection
4. Insure appropriate management of indwelling catheters
5. Special approaches for prevention of CAUTI including
    - Implementing organization-wide program to remove catheters that are no longer necessary
    - Implementing daily ward rounds by nursing and physician staff
    - Developing a protocol for management of post-operative urinary retention
    - Establishing a system for reporting data on catheter use and adverse event from catheter use

Note: Refer to the original guideline document for information on approaches that should not be considered a routine part of CAUTI prevention.

MAJOR OUTCOMES CONSIDERED

Incidence of catheter-associated urinary tract infection

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

The Expert Panel was divided into six task groups. In order to generate sound, evidence-based recommendations, a comprehensive reference library was created for each task group comprising articles, publications, and other materials relevant to their work. An expert in library science, aided by a JSI Research and Training Institute, Inc. (JSI) staff member with experience in literature review, conducted literature searches, selected articles for inclusion, and managed and organized the task group libraries. For the purpose of the project, JSI gathered an extensive body of literature (over 2000 published articles). Starting with the reference library of a local healthcare associated infections (HAI) expert, it was supplemented and updated to include the most current articles and expanded on recommendations made by Expert Panel and task group members. Figure 1 in the original guideline document summarizes the literature review process.

Literature searches were conducted in PubMed using applicable Medical Subject Headings (MeSH) and key words. Refer to Figure 2 in the original guideline document for information on literature search methodology.

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Quality of Evidence

I - Evidence from $\geq$1 properly randomized, controlled trial.

II - Evidence from $\geq$1 well-designed clinical trial, without randomization; from cohort or case-controlled analytic studies (preferably from >1 center); from multiple time-series; or from dramatic results from uncontrolled experiments.

III - Evidence from opinions of respected authorities, based on clinical experience, descriptive studies, or reports of expert committees.

(Excerpted with permission from the Infectious Disease Society of America/Society for Healthcare Epidemiology of America (IDSA/SHEA) healthcare-associated infection (HAI) Task Force 2008 guideline)

METHODS USED TO ANALYZE THE EVIDENCE

Review of Published Meta-Analyses
Systematic Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not stated

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Expert Consensus

DESCRIPTION OF METHODS USED TO FORMULATE THE RECOMMENDATIONS

The 2006 Health Care Reform Law directed the Massachusetts Department of Public Health (MDPH) to establish a comprehensive state wide infection prevention and control program. To direct this new effort, a healthcare-associated infection (HAI) Expert Panel was convened in November 2006 under the auspices of the Betsy Lehman Center for Patient Safety and Medical Error Reduction and MDPH. This multidisciplinary panel of experts included infectious disease specialists, epidemiologists, infection control and hospital quality professionals, consumers, professional organizations, and hospital executives and clinical leaders. Research, coordination and facilitation of the work of the Expert Panel and the associated Task Groups was provided by JSI Research and Training Institute, a public health research and consulting firm located in Boston.

The mission of the Expert Panel was to provide guidance on all aspects of a statewide infection control and prevention program, review the key elements of such a program, and submit their completed recommendations to the Betsy Lehman Center and the Massachusetts Department of Public Health by January 31, 2008.

The Expert Panel held twelve monthly meetings beginning on November 30, 2006. Due to the multi-faceted nature of the Panel's charge, six Task Groups were formed in order to focus the efforts of Panel members on their respective areas of expertise.

Due to time and capacity limitations, catheter-associated urinary tract infections (CAUTI) were not a specific task group topic. However, the product of a parallel process of evidence review and guideline updating, by experts representing the Infectious Disease Society of America (IDSA) and the Society for Healthcare Epidemiology of America (SHEA), was graciously made available to the project. An ad hoc committee of Expert Panel members and outside experts studied and endorsed these prevention guidelines and they have been incorporated into this final report.

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Strength of Recommendation

A - Good evidence to support a recommendation for use.

B - Moderate evidence to support a recommendation for use.

C - Poor evidence to support a recommendation.

(Excerpted with permission from the Infectious Disease Society of America/Society for Healthcare Epidemiology of America (IDSA/SHEA) healthcare-associated infection (HAI) Task Force 2008 guideline)

COST ANALYSIS

The annual economic burden of healthcare-associated infections (HAI) in Massachusetts ranges from approximately $200 million to well over $400 million. While it is difficult to determine a precise estimate, it is clear that these infections are costly. Mandatory reporting of institutional-level HAI is a potential tool for improvement of quality of care and a method to be used by consumers, insurers, or providers to make decisions regarding where to seek or fund healthcare. If HAI are reduced with mandatory reporting, societal cost-savings should be anticipated. However, the effect of mandatory reporting on HAI rates is yet unknown. Additionally, increased costs to the hospitals and the Department of Public Health (DPH) should be anticipated. The methods used in this report should be beneficial to other state DPH. With limited resources and the potential benefits of public reporting yet to be established, there is a need to carefully balance the additional burden of reporting with current prevention efforts in order to obtain the optimum outcome, less infections.

Refer to *Prevention and Control of Healthcare-Associated Infections in Massachusetts, Part 2: Findings from Complementary Research Activities* (see the "Availability of Companion Documents" field) for more information on cost-analysis.

METHOD OF GUIDELINE VALIDATION

Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

An ad hoc committee of Expert Panel members and outside experts studied and endorsed these prevention guidelines.

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

Note from the Massachusetts Department of Public Health (MDPH) and the National Guideline Clearinghouse (NGC):

- *Prevention and Control of Healthcare-Associated Infections in Massachusetts* guideline has been divided into individual summaries. In addition to the current summary, the following are available:
    - Hand hygiene recommendations
    - Standard precautions in hospitals
    - Contact precautions in hospitals

    - Environmental measures for the prevention and management of multi-drug resistant organisms
    - Prevention of ventilator associated pneumonia
    - Prevention of surgical site infections
    - Prevention of bloodstream infections
- Excerpted with permission of the Infectious Disease Society of America/Society for Healthcare Epidemiology of America (IDSA/SHEA) healthcare-associated infection (HAI) Task Force 2008; evidence rating taken directly from their original document.

Quality of evidence (I – III) and strength of recommendation (A – C) definitions are presented at the end of "Major Recommendations" field.

Basic Practices for Prevention of Catheter-Associated Urinary Tract Infection (CAUTI): Recommended for All Acute Care Hospitals

Provide Appropriate Infrastructure for Preventing CAUTI

1. Provide and implement written guidelines for catheter use, insertion, and maintenance. ***A-II***
    - Develop and implement facility criteria for acceptable indications for indwelling urinary catheter use.
    - Indications for indwelling urethral catheter use are limited, and include: (Gokula, Hickner, & Smith, 2004; Marklew, 2004)
        - Peri-operative use for selected surgical procedures
        - Urine output monitoring in critically ill patients
        - Management of acute urinary retention and urinary obstruction
        - To assist in pressure ulcer healing for incontinent residents
        - As an exception, at patient request to improve comfort

2. Ensure that trained personnel insert urinary catheters. ***B-III***
3. Ensure that supplies necessary for aseptic technique catheter insertion are available. ***A-II***
4. Implement a system for documenting in the patient record: indications for catheter insertion, date and time of catheter insertion, individual who inserted catheter, and date and time of catheter removal. ***A-II***
    - Include documentation in nursing flow sheet, nursing notes or physician orders. Documentation should be accessible in the patient record and recorded in a standard format for data collection and quality improvement purposes.
    - Electronic documentation that is searchable is preferred, if available.

5. Ensure that there are sufficient trained personnel and technology resources to support surveillance for catheter use and outcomes. ***A-III***

Perform Surveillance for CAUTI

6. Identify the patient groups or units on which to conduct surveillance based on frequency of catheter use and potential risk (e.g. types of surgery, obstetric, critical care). ***B-III***
7. Use standardized criteria for defining a CAUTI to identify patients who have a CAUTI (numerator data). ***A-II***

8. Collect catheter days (denominator data) on all patients in the patient groups or units being monitored. ***A-II***
9. Calculate CAUTI rates for target populations. ***A-II***
10. Measure the use of indwelling urinary catheters ***B-II***, including:
    - The percentage of patients with an indwelling urinary catheter inserted during hospitalization.
    - Percentage of catheter use with accepted indications.
    - Duration of indwelling catheter use.

11. Use surveillance methods for case finding that are appropriate for the institution and documented to be valid. ***A-III***

Education and Training

12. Educate healthcare worker (HCW) about catheter related UTIs, including alternatives to indwelling catheters, procedures for catheter insertion, management and removal. ***A-III***

Catheter Insertion: Measures to Prevent Infection

13. Insert urinary catheters only when necessary for patient care, and leave in place only as long as indications remain. ***A-II***
14. Consider other methods of management including condom catheters or in and out catheterization, where appropriate. ***A-I***
15. Practice hand hygiene (based on Centers for Disease Control and Prevention [CDC] or World Health Organization Guidelines) immediately before insertion of the catheter and before and after any manipulation of the catheter site or apparatus. ***A-III***
16. Insert catheters following aseptic technique and using sterile equipment. ***A-III***
17. Use gloves, drape and sponges, a sterile or antiseptic solution for cleaning the urethral meatus, and a single-use packet of sterile, lubricant jelly for insertion. ***A-III***
18. Use as small a catheter as possible consistent with proper drainage, to minimize urethral trauma. ***B-III***

Ensure Appropriate Management of Indwelling Catheters

19. Properly secure indwelling catheters after insertion to prevent movement and urethral traction. ***A-III***
20. Maintain a sterile, continuously closed drainage system. ***A-I***
21. Disconnection of the catheter and drainage tube is prohibited unless the catheter must be irrigated. ***A-I***
22. Replace the collecting system using aseptic technique and after disinfecting the catheter-tubing junction when breaks in aseptic technique, disconnection, or leakage occur. ***B-III***
23. For examination of fresh urine, collect a small sample by aspirating urine from the sampling port with a sterile needle and syringe after cleansing the port with disinfectant Transport urine specimens for culture promptly to the laboratory. ***A-III***
24. Obtain larger volumes of urine for special analyses aseptically from the drainage bag. ***A-III***

25. Maintain unobstructed urine flow. ***A-II***
26. Empty the collecting bag regularly using a separate collecting container for each patient. Avoid touching the draining spigot to the collecting container. ***A-II***
27. Keep the collecting bag below the level of the bladder at all times. ***A-III***
28. Cleaning of the meatal area with antiseptic solutions is unnecessary. Routine hygiene is appropriate. ***A-I***
29. To minimize cross-infection, avoid placing infected and uninfected patients with indwelling catheters in the same room or in adjacent beds. ***C-III***

Special Approaches for Prevention of CAUTI: Recommended for Use in Locations and/or Populations within the Hospital for Which Outcome Data and/or Risk Assessment Suggest Lack of Effective Control Despite Implementation of Basic Practices.

30. Implement an organization-wide program to identify and remove catheters that are no longer necessary using one or more methods documented to be effective. ***A-II***
    - Develop and implement institutional policy requiring continual, usually daily, review of the necessity of continued catheterization.
    - Electronic or other types of reminders may be useful.
        - Implement automatic stop orders requiring renewal of order for continuation of the indwelling catheter.
        - Use standardized reminders placed into patient charts or part of the electronic patient record.
    - Implement daily ward rounds by nursing and physician staff to review all patients with urinary catheters and ascertain continuing necessity.

31. Develop a protocol for management of post-operative urinary retention, including nurse directed use of intermittent catheterization and use of bladder scanners. ***B-I***
    - If bladder scanners are used, indications for use must be clearly stated, and nursing staff must be trained on their use.

32. Establish a system for analyzing and reporting data on catheter use and adverse events from catheter use. ***B-III***
    - Define and monitor adverse outcomes in addition to CAUTI including catheter obstruction, unintended removal, catheter trauma, or reinsertion within 24 hours of removal.
    - For analysis, stratify measurements of catheter use and adverse outcomes by relevant risk factors (e.g., sex, age, ward, duration). Review data in a timely fashion, and report to appropriate stakeholders.

Approaches That Should Not Be Considered a Routine Part of CAUTI Prevention

33. Do not routinely use silver coated or other antibacterial catheters. ***A-I***
34. Do not screen for asymptomatic bacteriuria in catheterized patients. ***A-II***
35. Do not treat asymptomatic bacteriuria in catheterized patients except prior to invasive urologic procedures. ***A-I***
36. Avoid catheter irrigation. ***A-I***

- Do not perform continuous irrigation of the bladder with antimicrobials as a routine infection prevention measure.
- If obstruction is anticipated, closed continuous irrigation may be used to prevent obstruction.
- To relieve obstruction due to clots, mucus, or other causes, an intermittent method of irrigation may be used.

37. Do not use systemic antibiotics routinely as prophylaxis. ***A-II***
38. Do not change catheters routinely. ***A-III***

Unresolved Issues

39. Use of antiseptic solution versus sterile saline for meatal cleaning prior to catheter insertion.
40. Use of antimicrobial coated catheters for selected patients at high risk of infection.

Definitions:

Quality of Evidence

I - Evidence from ≥1 properly randomized, controlled trial.

II - Evidence from ≥1 well-designed clinical trial, without randomization; from cohort or case-controlled analytic studies (preferably from >1 center); from multiple time-series; or from dramatic results from uncontrolled experiments.

III - Evidence from opinions of respected authorities, based on clinical experience, descriptive studies, or reports of expert committees.

Strength of Recommendation

A - Good evidence to support a recommendation for use.

B - Moderate evidence to support a recommendation for use.

C - Poor evidence to support a recommendation.

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

REFERENCES SUPPORTING THE RECOMMENDATIONS

References open in a new window

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The type of supporting evidence is identified and graded for each recommendation (see "Major Recommendations").

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Evidence-based best practice guidelines and interventions for prevention of healthcare-associated infection will promote patient and healthcare worker safety and improve health outcomes by reducing the risk of acquiring and transmitting healthcare associated infections.

POTENTIAL HARMS

Not stated

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

Comprehensive Cochrane reviews with meta-analysis evaluating interventions to prevent complications of short-term indwelling urinary catheters have demonstrated limited number of studies addressing any specific question, small study numbers, low quality of most studies, and heterogeneity in results, particularly when addressing morbidity.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

The final recommendations contained in *Prevention and Control of Healthcare-Associated Infections in Massachusetts* were adopted by the Betsy Lehman Center for Patient Safety and Medical Error Reduction (BLC) and the Massachusetts Department of Public Health (MDPH). MDPH incorporated the recommendations into the reporting requirements, and developed an assessment tool for surveyors to use to evaluate the implementation of best practices.

IMPLEMENTATION TOOLS

Staff Training/Competency Material

For information about availability, see the "Availability of Companion Documents" and "Patient Resources" fields below.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Getting Better
Staying Healthy

IOM DOMAIN

Effectiveness
Safety

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

Prevention of catheter-associated urinary tract infections. In: Betsy Lehman Center for Patient Safety and Medical Error Reduction, JSI Research and Training Institute, Inc. Prevention and control of healthcare-associated infections in Massachusetts. Part 1: final recommendations of the Expert Panel. Boston (MA): Massachusetts Department of Public Health; 2008 Jan 31. p. 83-9.

ADAPTATION

The guideline was adapted from: Lo E, Nicolle L, et al. Detection and Prevention of Catheter-Associated Urinary Tract Infections in Acute Care Hospitals. Infect Control Hosp Epidemiol (in press 2008).

DATE RELEASED

2008 Jan 31

GUIDELINE DEVELOPER(S)

Betsy Lehman Center for Patient Safety and Medical Error Reduction - State/Local Government Agency [U.S.]
Massachusetts Department of Public Health - State/Local Government Agency [U.S.]

SOURCE(S) OF FUNDING

Massachusetts Department of Public Health

GUIDELINE COMMITTEE

Massachusetts Healthcare-Associated Infections Expert Panel

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

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FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

GUIDELINE AVAILABILITY

Electronic copies: Available in Portable Document Format (PDF) from the Massachusetts Department of Public Health Web site.

AVAILABILITY OF COMPANION DOCUMENTS

The following are available:

- Betsy Lehman Center for Patient Safety and Medical Error Reduction, JSI Research and Training Institute, Inc. Prevention and control of healthcare-associated infections in Massachusetts. Part 2: findings from complementary research activities. Boston (MA): Massachusetts Department of Public Health; 2008 Jan 31. 131 p. Available in Portable Document Format (PDF) from the Massachusetts Department of Public Health Web site.
- Handwashing education materials for health care professionals. Available from the Massachusetts Department of Public Health Web site.

PATIENT RESOURCES

None available

NGC STATUS

This NGC summary was completed by ECRI Institute on October 21, 2008. The information was verified by the guideline developer on December 22, 2009.

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